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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,657	08/28/2003	Kenichi Nakatate	Q76816	6914

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SUGHRUE MION, PLLC  
2100 Pennsylvania Avenue, N.W.  
Washington, DC 20037-3213

EXAMINER

DEGHAN, QUEENIE S

ART UNIT	PAPER NUMBER
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1731

MAIL DATE	DELIVERY MODE
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09/25/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/649,657	Applicant(s) NAKATATE ET AL.	
	Examiner Queenie Dehghan	Art Unit 1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-28 is/are pending in the application.
- 4a) Of the above claim(s) 22-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-21, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on July 19, 2007 has been entered.

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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3. Claims 1 and 5-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magome et al. (2002/0145711) in view of Urano et al. (English translation of JP Abstract 2000-103629).

4. Regarding claims 1, 9, and 10, Magome et al. disclose an apparatus comprising a container (6) filled with a gas containing hydrogen ([0103], figure 1), an inlet (31a) and outlet (93) provided on said container and capable of allowing gas to be continuously supplied into the container ([0087]), an optical element of silica glass, such as a lens, accommodated in the container, and an excimer laser emitting UV light, ([0032], [0057]), wherein the optical element and light source are aligned so that the light is incident on the optical element (figure 1). However, Magome et al. fail to disclose the pressure of the hydrogen gas. Urano et al. teach placing a quartz glass article in an atmosphere comprising hydrogen with a partial pressure of 0.1-10 atm (0.1-10kgf/cm<sup>2</sup>) when irradiating the glass article with UV light (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the partial pressure of hydrogen as taught by Urano et al. in the apparatus of Magome et al. in order to inhibit the increase loss of UV transmission of the optical elements, as taught by Urano et al.

5. Regarding claims 5-7, Magome et al. disclose a shut-off valve disposed on the inlet of the container that is connected to an external element for supplying the gas into the container (figure 1, 2, [0060]). Magome et al. further disclose an outlet (93) for the hydrogen gas (figure 1, [0069]).

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6. Regarding claim 8, Magome et al. fail to disclose the concentration of the hydrogen gas. Urano et al. teach using pure hydrogen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the pure hydrogen gas of Urano et al. in Magome et al. apparatus in order to ensure enough hydrogen is present to prevent the UV irradiation degradation.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Magome et al. (2002/0145711) in view of Urano et al. (English translation of JP Abstract 2000-103629), as applied to claim 1 above, and further in view of Ohtsu et al. (6,793,980). Magome et al. disclose a mixed gas atmosphere, but fail to disclose the concentration of the hydrogen in the gas atmosphere. Ohtsu et al. teach an atmosphere of a nitrogen gas containing 3% vol. Hydrogen for irradiating a glass plate with an excimer laser (col. 10 lines 53-59, col. 7 lines 21-29). Although Ohtsu et al. method is primarily focused on forming a film, Ohtsu et al. presents an application wherein a chamber containing a glass element is exposed to a reducing environment, that is a gas containing hydrogen, when exposed to exposure light from an excimer laser. This is an environment similar to that of the exposure apparatus of Magome et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the hydrogen concentration of Ohtsu et al. in the container of Magome et al. and Urano et al. in order to provide for a reducing environment that is below the explosion limit of the hydrogen gas, as taught by Ohtsu et al.

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8. Claims 11 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hagiwara et al. (6,222,610) in view of Urano et al. (English translation of JP Abstract 2000-103629) and Ohtsu et al. (6,793,980).

9. Regarding claims 11, Hagiwara et al. disclose a container filled with a gas containing hydrogen (col. 2 lines 33-37, col. 12, lines 23-28). Furthermore, Hagiwara et al. disclose the container having a first light transmission window (9A in figure 1), and an optical element in the container (9B in figure 1), wherein the optical element is aligned to receive light incident upon the transmission window (figure 1, col. 6 lines 8-11). However, Hagiwara et al. fail to disclose the pressure of the hydrogen gas used in the container. Urano et al. teach placing a quartz glass article in an atmosphere comprising hydrogen with a partial pressure of 0.1-10 atm (0.1-10kgf/cm<sup>2</sup>) when irradiating the glass article with UV light (abstract). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the partial pressure of hydrogen as taught by Urano et al. in the apparatus of Hagiwara et al. in order to inhibit the increase loss of UV transmission of the optical elements, as taught by Urano et al.

10. In addition, Hagiwara et al. teach an atmosphere for an exposure apparatus comprising nitrogen and hydrogen, but fail to disclose the concentration of the hydrogen in the gas atmosphere. Ohtsu et al. teach an atmosphere of a nitrogen gas containing 3% vol. Hydrogen for irradiating a glass plate with an excimer laser (col. 10 lines 53-59, col. 7 lines 21-29). ). Although Ohtsu et al method is primarily focused on forming a film, Ohtsu et al. presents an application wherein a chamber containing a glass element

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is exposed to a reducing environment, that is a gas containing hydrogen, when exposed to exposure light from an excimer laser. This is an environment similar to that of the exposure apparatus of Hagiwara et al. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the hydrogen concentration of Ohtsu et al. in the container of Hagiwara et al. and Urano et al. in order to provide for a reducing environment that is below the explosion limit of the hydrogen gas, as taught by Ohtsu et al.

11. Regarding claims 15-17, Hagiwara et al. disclose shut-off and check valves disposed on the inlet of the container that is connected to an external element for supplying the gas into the container. Hagiwara et al. further disclose an outlet for the hydrogen gas (figure 2, col. 7 line 64 to col. 8 line 15, abstract).

12. Regarding claim 18, Hagiwara et al. fail to disclose the concentration of the hydrogen gas. Urano et al. teach using pure hydrogen. It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the pure hydrogen gas of Urano et al. in Hagiwara et al. apparatus in order to ensure enough hydrogen is present to prevent the UV irradiation degradation.

13. Regarding claims 19-21, Hagiwara et al. disclose a light transmission window that is a lens (9A) and an optical element that is a lens (9B) as well (figure 2, col. 6 lines 8-11). Hagiwara et al. also disclose a container further comprising a second light transmission window, arranged to transmit light incident upon the first transmission window after the light is transmitted through the optical element (9C in figure 2).

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14. Claims 2-3 and 12-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magome et al. (2002/0145711) in view of Urano et al. (English translation of JP Abstract 2000-103629), as applied to claim 1 above, and Hagiwara et al. (6,222,610) in view of Urano et al. (English translation of JP Abstract 2000-103629) and Ohtsu et al. (6,793,980), as applied to claim 11 above, and further in view of Fujinoki et al. (English machine translation of JP 2000-095535). Magome et al., Urano et al., Hagiwara et al., and Ohtsu et al. fail to disclose an optical element that has been subjected to a heat treatment. Fujinoki et al. teach heat treating an optical element in a hydrogen atmosphere before accommodating in the container, wherein the pressure of the hydrogen atmosphere is 10 atm ( $10\text{kgf/cm}^2$ ) and the temperature is 300-450°C ([0019]). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the heat treatment of Fujinoki for the optical elements placed in the container of Magome et al., Urano et al., Hagiwara et al. and Ohtsu et al. in order to provide for an optical element that has high endurance for irradiation of an UV laser, as taught by Fujinoki et al.

15. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Magome et al. (2002/0145711) in view of Urano et al. (English translation of JP Abstract 2000-103629), as applied to claim 1 above, and Hagiwara et al. (6,222,610) in view of Urano et al. (English translation of JP Abstract 2000-103629) and Ohtsu et al. (6,793,980), as applied to claim 11 above, and further in view of Ito et al. (5,867,618). Magome, Urano, Hagiwara and Ohtsu do not specifically disclose a partial pressure of hydrogen set in the range of 300 to 500kgf/cm<sup>2</sup>. Ito et al. teach treating an optical



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element in a container filled with hydrogen gas at a partial pressure in the range of 20 to 400 atm and provide an example where the hydrogen pressure is 300atm (310kgf/cm<sup>2</sup>) (col. 5 lines 61-62, col. 6 lines 1-3, 43-44). Doing so would result in an optical element that is irradiated with UV light to have an increased photoinduced refractive index change and an increase transmission of light, as taught by Ito et al. (col. 1 lines 40-54). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the partial pressure of hydrogen gas of 300atm, as taught by Ito et al., in the process of Magome, Hagiwara, Ohtsu, and Urano, because Ito et al. teach that the saturation of the hydrogen is effective at 300 atm.

### ***Response to Arguments***

16. Applicant's arguments filed July 19, 2007 have been fully considered but they are not persuasive.

17. The applicant briefly mentions that the prior art fail to recite the claim limitation of a partial pressure of 0.01 to 500 kgf/cm<sup>2</sup>. The applicant fails to point out how the prior art fail this. The office action clearly points to prior art that recites this limitation.

18. Applicant's arguments with respect to claim 1 with respect to the amended feature of an inlet and outlet for continuous flow of gas have been considered but are moot in view of the new ground(s) of rejection. On the contrary, the prior art does recite this feature, as indicated above.

19. In regards the applicant's arguments regarding a translational error in the reference of Hagiwara, the applicant argues that the foreign priority document JP 9-

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075355 does not include the use of hydrogen. The foreign priority document is the not the reference relied upon in the rejection. Furthermore, US patent 6,222,610 is not limited to incorporating only the content of the priority document in the application in which the claim for priority is made. The applicant also argues that hydrogen is not classified as either a chemically stable gas or a rare gas. It appears that Ohtsu discloses that hydrogen is explosive at higher limits, therefore making hydrogen a stable gas at low levels. Furthermore, the term "rare gas" is a gas that is not widely naturally existent. That is, hydrogen gas is very rare in the Earth's atmosphere (1 ppm by volume). Lastly, the applicant argues that Hagiwarai does not contain an enabling disclosure for hydrogen used as an inert gas. The prior art is presumed to be operable/enable and the burden is on the applicant to provide facts rebutting the presumption of operability. In re Sasse, 629 F.2d 675, 207 USPQ 107 (CCPA 1980). See MPEP § 2121 and § 716.07. In summary, the US patent used in the rejection clearly recites the use of hydrogen. The burden to prove that hydrogen is a typographical error lies with the applicant and not the examiner. This is done with evidence and not mere arguments.

20. In regards to the applicant's arguments with respect to reference of Ohtsu, the applicant indicates that the reference is non-analogous art. The Examiner disagrees. The prior art of Ohtsu teaches an environment within a sealed chamber, wherein a glass element contained within is exposed to UV light with an excimer lamp, which is similar to an exposure apparatus. Ohtsu teaches the environment to be a reducing atmosphere comprising nitrogen and hydrogen and that it desirable for the hydrogen

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content to be a low amount to be within the safe working conditions of hydrogen, which is explosive at higher levels. This hydrogen level appears to some a similar problem with which the inventors of the present application were concerned with, that is an atmosphere for glass elements in a chamber when it is exposed to UV light and the content of the hydrogen being within safe working limits.

### ***Conclusion***

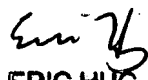
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Queenie Dehghan whose telephone number is (571)272-8209. The examiner can normally be reached on Monday through Friday 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Q Dehghan

  
ERIC HUG  
PRIMARY EXAMINER